

REMARKS

Claims 1-17 are under active consideration.

The Office has rejected claims 1-17 under 35 U.S.C. § 102(b) over Eberle (U.S. 5,792,719). In addition, the Office has rejected claims 1-17 under 35 U.S.C. § 103(a) over the combination of Eberle and Okazaki (U.S. 4,510,274).

Eberle describes supported catalysts for gas-phase oxidation and describes preparing the catalyst with an aqueous slurry that may contain an organic binder that may be a vinyl acetate/ethylene copolymer (column 3, lines 47-64). However, while Eberle generically describes this copolymer, Eberle does not teach or suggest the recited vinyl C₂-C₄-carboxylate content of at least 62 mol%. This is noted by the Office on page 5 of the Office Action. Accordingly, Eberle does not teach or suggest all the recitations of the claimed catalyst, and therefore, the claimed catalyst would not have been anticipated by Eberle. As such, Applicants respectfully request that the Office withdraw the rejection of claims 1-17 under 35 U.S.C. § 102(b) over Eberle.

In the alternative, the Office rejected claims 1-17 under 35 U.S.C. § 103(a) over the combination of Eberle and Okazaki. Applicants note that any *prima facie* case of obviousness has been rebutted by a showing of unexpected results (see page 2 of the specification and MPEP § 2144.09 (VII)).

Specifically, Applicants direct the Office to pages 9-12 of the specification. Here four catalyst systems were prepared with catalysts R1.1 and R1.2. Both are within the claimed molar

content of the vinyl C₂-C₄-carboxylate (i.e., 63 and 67 mol% vinyl acetate). Catalysts R1.3 and R1.4 are outside the claimed range. Notably, Applicants direct the Office to catalyst R1.3 which is just outside the claimed range (i.e., 60 mol% vinyl acetate).

Inspection of Tables 2 and 3 show the significant improvement in catalytic activity of the claimed catalyst systems. Table 2 shows hydrogen consumption for the four catalysts where lower H₂ consumption provides for improved catalytic activity. Hydrogen consumption less than 5.0 mol/mol of vanadium is preferred for best catalytic activity. As can be seen in Table 2 the catalysts prepared within the claimed range give significantly better (lower) hydrogen consumption than catalysts prepared outside the claimed range (4.6 moles H₂ consumption per mole of vanadium versus 6-6.7).

Applicants noted on page 3, first paragraph of the specification that low hydrogen consumption is indicative of a higher proportion of polymeric vanadium species and a low proportion of monomeric vanadyl species. Polymeric vanadium species are preferred for optimal catalytic activity and decreased generation of undesired by-products. Applicants note that it is quite surprising that the choice of binder results in a different molecular arrangement of vanadium species on the titanium dioxide surface.

Inspection of Table 3 shows that the catalyst (R1.1) prepared within the claimed range gives a better phthalic anhydride yield (106.6) versus the catalyst (R1.4) outside the claim range (104.3). In addition, catalyst R1.1 gives less unwanted phthalazide (0.11 wt%) than catalyst R1.4 (0.80 wt%).

In summary, Applicants submit that any case of obviousness has been rebutted by a showing of unexpected results as discussed above. Accordingly, Applicants respectfully request that the Office withdraw the rejections of claims 1-17 under 35 U.S.C. § 103(a) over Eberle and Okazaki.

In light of the remarks above, Applicants submit that the application is in consideration for allowance. Favorable reconsideration is respectfully requested.

Applicant believes no fee is due with this request. However, if a fee is due, please charge our Deposit Account No. 03-2775, under Order No. 13111-00031-US1 from which the undersigned is authorized to draw.

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Respectfully submitted,
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